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Bromocryptine treatment and puberty attainment in the female rat

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Summary. The influence of bromocryptine treatment on the timing of vaginal patency and 1st oestrus in female rats was studied. No significant influence of bromocryptine on these parameters was noted, and it is concluded that suppression of prolactin secretion has no effect on puberty attainment.

Exposure of prepubertal rats or mice to males or male odours is known to advance the onset of 1st oestrus[2,3], indicating that this 'male effect' is mediated by a primer pheromone. However, it is still unclear whether the pheromone acts initially via an elevation of gonadotrophin secretion, or a suppression of prolactin secretion, both of which are known to occur[4,5]. Since various reports suggest that prolactin may be implicated in the timing of the onset of puberty in the rat[6-8], it was decided to further investigate its influence by selectively inhibiting its release by administration of bromocryptine to prepubertal female rats.

Materials and method. 40 prepubertal female rats, weaned at 20 days of age, were randomly allocated to one of 2 groups. From an age of 25 days these groups were subjected to one of 2 treatments. The treatments were either daily s.c. injections of 0.5 mg bromocryptine mesylate in 0.1 ml of vehicle consisting of propylene glycol:ethanol:0.9% saline (1:1:2 v/v) or daily injections of 0.1 ml of vehicle alone.

Rats were housed in groups of 4 per cage in a 14:10 h light:dark cycle, and from weaning were fed ad libitum on a standard rat diet. All rats were checked daily for vaginal opening, whereupon the injection schedule ceased and smears were taken daily by flushing the vagina with a small drop of water. The interval between vaginal patency and the 1st oestrus smear was recorded. All rats were weighed at oestrus.

Results and discussion. The results presented in the table indicate that bromocryptine treatment had no significant effect on ages at vaginal patency or 1st oestrus, or on the interval between these events. The weight at 1st oestrus was not significantly affected by treatment. Although determinations of serum prolactin levels were not made, the dose of bromocryptine used is known to effectively inhibit the release of prolactin[9,10].

It has been suggested that the involvement of prolactin in puberty onset may be via an inhibition of LH release[11,12]. Thus, if prolactin is involved in the onset of puberty its removal might be expected to cause an advancement of the 1st oestrus. The results from the present trial do not substantiate this expectation. Thus, it may be concluded that if prolactin is involved in puberty attainment in the rat, it is not indispensible in this role, although final conclusions must await prolactin assay data.

The effect of bromocryptine on puberty attainment in the rat

Treatment	Age at vaginal opening (days)	Age at 1st oestrus (days)	Vaginal opening – oestrus, interval (days)	Weight at oestrus (g)
Bromocryptine	36.0±0.6	38.0±0.5	2.0±0.3	125.2±2.9
Control	34.9±0.5	37.0±0.5	2.1±0.3	118.0±7.7

Values are mean±SEM.

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